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Non-Infectious Ocular Manifestations of Atopic Dermatitis

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Abstract

Atopic dermatitis is a prevalent chronic inflammatory skin condition that is associated with various ocular complications. This article will review the clinical non-infectious ocular manifestations of atopic dermatitis including keratoconjunctivitis, keratoconus, cataracts, glaucoma and retinal detachment. It is important for providers to recognize and treat these comorbidities early on in the disease course in order to prevent permanent vision loss.

Keywords: Atopic dermatitis;Keratoconjunctivitis; Glaucoma; Retinal detachment

Description

Atopic Dermatitis (AD), also called atopic eczema, is a chronic inflammatory skin disease that is characterized by recurrent pruritic and eczematous skin lesions. It affects up to 20% of children and 5% of adults in the United States [1]. Other than its well-known cutaneous manifestations, AD can present with various ocular complications. Studies have shown that people with AD have a higher prevalence of ocular diseases than the general population [2]. Common non-infectious ocular manifestations include keratoconjunctivitis, keratoconus, cataracts, glaucoma and retinal detachment [3].

Atopic Kerato Conjunctivitis (AKC) is one of the most severe complications of AD [4]. It is a chronic non-infectious inflammatory condition of the ocular surface that occurs predominantly in late adolescence and persists until about 50 years of age [5]. Studies have shown that AKC is associated with AD in 95% of cases [6]. The most common symptoms of AKC include itching, tearing, redness, mucoid discharge, burning and blurry vision. Many patients present with periorbital eczema, edema and eyelid thickening causing infraorbital linear lid creases called Dennie-Morgan lines [4]. AKC causes bilateral conjunctival inflammation and diffuse papillary hypertrophy of the upper and lower tarsal conjunctiva. Persistent inflammation and trauma from thickened conjunctiva leads to corneal erosions, ulcerations and neovascularization. If left untreated, AKC can lead to corneal scarring and permanent vision impairment.

Keratoconus is a non-inflammatory condition characterized by bilateral, asymmetric corneal thinning and ectasia. It presents during adolescence and progresses until about 40 years of age [7]. Keratoconus is highly associated with atopic dermatitis due to frequent eye rubbing from ocular pruritus [8]. Common symptoms include blurry vision and photophobia. Protrusion and thinning of the cornea leads irregular astigmatism and declining visual acuity [9].

Cataracts occur in 5%-38% of patients with AD [10]. Compared to the general population, atopic cataracts can occur in adolescence and develop before the age of 50. Anterior Subcapsular Cataracts (ASCs) are specific to AD but Posterior Subcapsular Cataracts (PSCs) are more prevalent in the AD population [11]. The etiology of cataracts is multifaceted and can be related to AD disease severity, chronic inflammation and oxidative damage, ocular trauma from eye rubbing, genetic predisposition or prolonged corticosteroid use [10]. Atopic cataracts are bilateral, lenticular opacities that can present with blurred vision, photophobia, visual disturbances and monocular diplopia.

Glaucoma is a well-described complication of AD, specifically with long-term corticosteroid treatment. Corticosteroid use increases intraocular pressure, aqueous outflow resistance and risk for open-angle glaucoma [3,12]. Studies also suggest that in addition to steroid-induced glaucoma, intrinsic atopic glaucoma should be considered a new clinical entity [13,14]. It is characterized by elevated Inflammatory Cytokines (IL-8 and CCL2) in aqueous humor and abnormal accumulation of fibers in the corneoscleral meshwork. If left untreated, glaucoma can lead to irreversible ocular hypertension and permanent optic nerve damage.

Retinal detachment is a serious complication that can occur in young adults with AD. It typically develops in ages 20-30 and has an incidence rate of 4%-8% in AD patients [3]. Although its pathogenesis is still unclear, studies have demonstrated that chronic ocular mechanical trauma from rubbing behaviors greatly increases risk of retinal detachment [10]. Common symptoms include visual disturbances such as floaters or a curtain-like shadow over the visual field. Prompt treatment is necessary as it may progress to permanent blindness.

Atopic dermatitis is associated with several ocular comorbidities that necessitate prompt treatment. Early diagnosis and intervention can prevent ocular complications and risk of permanent vision loss. Patients with AD should be educated about alarming ocular symptoms such as irritation, redness and visual disturbances. In addition to the non-infectious ocular complications of AD outlined in this review, infectious manifestations, such as bacterial blepharoconjunctivitis and herpetic ocular disease, and iatrogenic causes, such as dupilumab-associated ocular complications, should be considered.

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